



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NATIONAL VEHICLE AND FUEL EMISSIONS LABORATORY
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OFFICE OF
AIR AND RADIATION

November 23, 1999

VPCD-99-17 (LDV/LDT/SM/ICI/LIMO)

Dear Manufacturer:

SUBJECT: Changes to EPA's Data Base for CAP 2000

Enclosure I provides an outline of recent changes which have been made to the Certification and Fuel Economy Information System (CFEIS) data base to accommodate the certification of 2001 model year vehicles to CAP 2000 requirements, ref. 64 FR 23906, May 4, 1999.

Enclosure I does not contain changes to accommodate certification to the Supplemental Federal Test Procedure (SFTP) emission standards. SFTP changes will be provided to the industry in a separate guidance letter, in the next month or so.

Manufacturers are reminded to use the most current version of the CFEIS Manufacturers User Guide (CMUG) for guidance when submitting data to the EPA data base. It is available on the Internet on www.epa.gov/oms/cmug.htm, and is updated on a daily or weekly basis.

If you have any questions about this letter, please contact your certification team representative.

Sincerely,

A handwritten signature in cursive script that reads "Gregory A. Green".

Gregory A. Green, Director
Vehicle Programs and Compliance Division
Office of Mobile Sources

Enclosure

Enclosure I

CAP 2000 Changes to EPA Data Base - 2001 Model Year and Later

1. Durability Group Information (DG).

The following fields constitute Durability Group Information and should be entered through ESI data submission..

<u>Field Name</u>	<u>Record Type</u>	<u>Position</u>	<u>Valid Range/Comments</u>
<u>Durability Group Name</u>	<u>ER</u> <u>(new)</u>	<u>5-16</u>	<u>ER record is required if CAP2000 field (col 91 on E1) is 2 and is to be placed between E1 and ZZ records..</u>
<u>Catalyst Precious Metal Combination</u>	<u>ER</u> <u>(new)</u>	<u>18-19</u>	<u>Required if the DG (Durability Group) name is not in the data base</u> <u>1 - platinum based oxidation catalyst</u> <u>2 - palladium based oxidation catalyst</u> <u>3 - platinum and palladium oxidation catalyst</u> <u>4 - platinum and rhodium three-way catalyst</u> <u>5 - palladium and rhodium three way catalyst</u> <u>6 - platinum and palladium and rhodium three way catalyst</u>
<u>Fuel Combination</u>	<u>ER</u> <u>(new)</u>	<u>21</u>	<u>Required if the DG name is not in the data base</u> <u>S - Single fuel</u> <u>D - Dual fuel</u> <u>F - Flexible fuel</u>
<u>Combustion Cycle</u>	<u>E1</u>	<u>50</u>	<u>Note: New code 'C' is added for Fuel cell vehicles</u> <u>G - Otto Cycle Piston</u> <u>D - Diesel Cycle</u> <u>R - Otto Cycle Rotary</u> <u>2 - Two Stroke Cycle</u> <u>T - Turbine</u> <u>H - Hybrid</u> <u>E - Electric</u> <u>A - Other</u> <u>C - Fuel cell</u>
<u>Ignition Type</u>	<u>E1</u>	<u>52</u>	<u>Note: New code 'N' is added</u> <u>S - Spark</u> <u>C - Compression</u> <u>N - Not applicable</u>

<u>Basic Fuel Metering System</u>	<u>E1</u>	<u>54-55</u>	<u>Note: New definition of valid codes (Valid codes are different from the previous ESI data field definition)</u> <u>5 - TBI</u> <u>12 - Port Fuel Injection</u> <u>13 - Carburetor</u> <u>14 - CNG Mixer Unit</u> <u>98 - None (Electric)</u> <u>99 - Other (Contact EPA Prior to Use)</u>
<u>Catalyst construction</u>	<u>E1</u>	<u>62-63</u>	<u>Note: New definition of valid codes (Valid codes are different from the previous ESI data field definition)</u> <u>8 - No Catalyst</u> <u>9 - Unheated Monolith Catalyst</u> <u>10 - Heated Monolith Catalyst</u> <u>11 - Unheated Metal Catalyst</u> <u>12 - Heated Metal Catalyst</u> <u>13 - Unheated Beaded Catalyst</u> <u>14 - Heated Beaded Catalyst</u> <u>15 - Unheated Monolith and Metal Catalyst</u> <u>16 - Heated Monolith and Metal Catalyst</u> <u>99 - Other (Contact EPA Prior to Use)</u>
<u>Trap (particulates)</u>	<u>E1</u>	<u>65-66</u>	<u>Note: Same as before</u> <u>0 - None</u> <u>1 - Trap - Active Regeneration</u> <u>2 - Trap - Continuous Regeneration</u> <u>3 - Trap - Continuous Regen + Fuel Additive</u> <u>99 - Other (Contact EPA prior to use) no changes</u>
<u>CAP2000</u>	<u>E1</u>	<u>91</u>	<u>Note: Defaults to 0.</u> <u>0 - Prior to CAP2000</u> <u>1 - CAP2000</u> <u>2 - Full CAP2000 with Durability Group data. *</u>

If the DG name already exists in the data base, fields other than the DG name need not be filled out and they will be ignored if entered..

* For any new model year 2001 and later data this CAP2000 code of '2' has to be entered. Otherwise the data will be rejected. (The software will be changed to default it to 2 in the near future)

Durability Group Name:

Durability groups are named by a 12 digit name which is constructed as follows:

<u>Character #</u>	<u>Description</u>
<u>1</u>	<u>Model year – use the same codes as test group</u>
<u>2, 3, 4</u>	<u>MFR – Use the same letter codes as test group</u>
<u>5</u>	<u>Combustion Cycle – See table below</u>
<u>6</u>	<u>Engine type – See Table below</u>
<u>7</u>	<u>Primary Fuel Used – See table below</u>
<u>8</u>	<u>Second fuel used. Use this field for dual fueled, flexible fuel and bi-fuel vehicles</u>
<u>9</u>	<u>Third fuel used</u>
<u>10, 11, 12</u>	<u>Open for manufacturers use (catalyst code)</u>

Cycle Code for Durability Group Name

<u>Cycle</u>	<u>Code</u>
<u>Otto Cycle - two stroke</u>	<u>2</u>
<u>Otto Cycle - four stroke</u>	<u>G</u>
<u>Diesel Cycle - two stroke</u>	<u>A</u>
<u>Diesel Cycle - four stroke</u>	<u>D</u>
<u>Dedicated Electric</u>	<u>E</u>
<u>Hybrid Electric with Otto cycle. / 4 stroke engine</u>	<u>H</u>
<u>Electric - fuel cell</u>	<u>C</u>

Engine type Code for Durability Group Name

<u>Engine Type</u>	<u>Code</u>
<u>Piston</u>	<u>P</u>
<u>Rotary</u>	<u>R</u>
<u>Electric</u>	<u>E</u>
<u>Hybrid Electric</u>	<u>H</u>

Fuel code for Durability Group Name

<u>Fuel Used</u>	<u>Code</u>
<u>Gasoline</u>	<u>G</u>
<u>Diesel</u>	<u>D</u>
<u>Methanol</u>	<u>M</u>
<u>Ethanol</u>	<u>E</u>
<u>CNG</u>	<u>C</u>
<u>LNG</u>	<u>L</u>
<u>LPG</u>	<u>P</u>
<u>Electric</u>	<u>V</u>
<u>N/A (for second or third fuel)</u>	<u>N</u>
<u>Hybrid Electric</u>	<u>Use code for the other fuel</u>

2. Test Group Information

System number does not apply to a Test Group, but the value of 1 will be assigned to it due to the data base requirements regardless of what is entered in the input data record.

<u>Field Name</u>	<u>Record Type</u>	<u>Position</u>	
<u>System Number</u>	<u>E1</u>	<u>18-19</u>	<u>'1' or leave it blank</u>
<u>Ignition Type</u>	<u>E1</u>	<u>52-52</u>	<u>A new code 'N' has been added</u> <u>S - Spark</u> <u>C - Compression</u> <u>N - Not applicable</u>
<u>DF Type</u> -	<u>E2</u>	<u>47-47</u>	<u>A new code 'A' is added and the existing code 'Z' will be removed.</u> <u>'A' - aged components installed on the emission data vehicle.</u>
<u>EERC</u>	<u>EE</u>	<u>all</u>	<u>Not applicable for Full CAP2000 application - New 'VE' record provided in VI instead.</u>

3. VI (Vehicle Information)

<u>Field Name</u>	<u>Record Type</u>	<u>Position</u>	
<u>Turbocharger/Sup ercharger</u>	<u>V1</u>	<u>80</u>	<u>New field (required)</u> <u>'T' - Turbocharger</u> <u>'S' - Supercharger</u> <u>'N' - None</u>
<u>Catalyst</u>	<u>V1</u>	<u>82-83</u>	<u>New field (required)</u> <u>1 - Oxygen Catalyst Only</u> <u>2 - Reduction Catalyst</u> <u>3 - 3-Way Catalyst</u> <u>4 - 3-Way + Oxygen Catalyst</u> <u>5 - 3-Way + Oxygen Catalyst (Light-Off / Close Coupled)</u> <u>6 - Heated Catalyst</u> <u>7 - Heated Catalyst (Light-Off / Close Coupled)</u> <u>8 - No Catalyst</u> <u>99 - Other (Contact EPA Prior to Use)</u>
<u>Input Record Type</u>	<u>VE</u>	<u>1-2</u>	<u>VE (new record)</u>

<u>EERC Process Code</u>	<u>VE</u>	<u>3</u>	For Add: 'A' or blank For Delete: 'D'
<u>EERC</u>	<u>VE</u>	<u>5-6</u>	<u>01</u> - <u>Combustion Chamber / Non - Conventional Valve Train</u> <u>02</u> - <u>Engine Modification (Diesel Only)</u> <u>05</u> - <u>Thermal Reactor</u> <u>10</u> - <u>Air Pump</u> <u>11</u> - <u>Pulsating Air System (Pulsating Air Injection)</u> <u>14</u> - <u>Closed Loop (Heated O² Sensor)</u> <u>15</u> - <u>3-Way + CL (Heated O² sensor + Feedback)</u> <u>16</u> - <u>Oxidation Catalyst</u> <u>17</u> - <u>Reduction Catalyst</u> <u>18</u> - <u>Three-way Catalyst</u> <u>19</u> - <u>Closed Loop (Non-Heated O² sensor)</u> <u>20</u> - <u>Three-way Catalyst plus Closed Loop (Non-heated Oxygen sensor and feedback loop)</u> <u>21</u> - <u>Closed-Loop Air Injection</u> <u>31</u> - <u>Ported EGR</u> <u>32</u> - <u>Back Pressure EGR</u> <u>33</u> - <u>Venture Vacuum Amplified EGR</u> <u>34</u> - <u>Direct Throttle Activated EGR</u> <u>35</u> - <u>Other Activated EGR</u> <u>41</u> - <u>Multiple Point Fuel Injection</u> <u>42</u> - <u>Throttle Body Fuel Injection</u> <u>50</u> - <u>Turbocharger</u> <u>52</u> - <u>Supercharger</u> <u>60</u> - <u>Detonation Sensor</u> <u>61</u> - <u>Electronic Controls - Analog</u> <u>62</u> - <u>Electronic Controls - Digital</u> <u>91</u> - <u>HC Adsorber</u> <u>92</u> - <u>NOX Adsorber</u> <u>93</u> - <u>Electrically Heated Catalyst</u> <u>94</u> - <u>Fuel Heated Catalyst</u> <u>95</u> - <u>Energy Storage Device (e.g.: Hybrid Vehicle)</u> <u>96</u> - <u>Regenerative Brakes</u> <u>99</u> - <u>Other</u>
<u>Fuel System</u>	<u>VF</u>	<u>36-37</u>	<u>New field (required)</u> <u>0</u> - <u>Multiple Carburetors</u> <u>1</u> - <u>1 BBL</u> <u>2</u> - <u>2 BBL</u> <u>3</u> - <u>3 BBL</u> <u>4</u> - <u>4 BBL</u> <u>5</u> - <u>TBI</u> <u>6</u> - <u>Mechanical MPI</u> <u>7</u> - <u>Elec. MPI - Simultaneous</u> <u>8</u> - <u>Elec. MPI - Sequential</u> <u>9</u> - <u>Central Port Injection</u> <u>10</u> - <u>Elec. CPI - Simultaneous</u> <u>11</u> - <u>Elec. CPI - Sequential</u> <u>14</u> - <u>CNG Mixer Unit</u> <u>98</u> - <u>None (Electric)</u> <u>99</u> - <u>Other (Contact EPA Prior to Use)</u>

Carry over of non-CAP2000 or interim CAP2000 (CAP2000 code of 1) vehicle configuration to a full CAP2000 test group.

Existing carry-over procedure still applies but the new data applicable to full CAP2000 must be entered at the time of carry-over., i.e., Turbo/Super charge, Catalyst, VE records and Fuel System.

4.MTDS

<u>Field Name</u>	<u>Record Type</u>	<u>Position</u>	
<u>Aged emission components usage</u>	<u>T1</u>	<u>75-77</u>	(This field will be an optional field now but may become a required field when the EPA's software is updated in the future.) <u>Enter the age of the emission control system components (in thousands of miles) or 'NA' as in the following examples:</u> <u>NA - Normal 4k emission or fuel economy data vehicle was used</u> <u>50 - 50k aged components used on test vehicle</u> <u>100 - 100k aged components used on test vehicle</u> <u>120 - 120k aged components used on test vehicle</u> <u>150 - 150k aged components used on test vehicle</u>

The above new field will become a required field when EPA's software is updated in the near future.

5. Summary Sheet

<u>Field Name</u>	<u>Record Type</u>	<u>Position</u>	<u>Valid Range/Comments</u>
<u>Process Code</u>	<u>X1</u>	<u>3</u>	<u>'C' is added to allow updating the CAP2000 conditional certificate code</u> <u>to '2' without reprocessing or replacing Summary Sheet data.</u>
<u>CAP2000 conditional certificate</u>	<u>X1</u>	<u>58</u>	<u>1 - EPA confirmatory testing is pending(valid for process code of 'A' , blank or 'R')</u> <u>2 - confirmatory test complete and entered</u>

Once the conditional certificate has been issued for a Summary Sheet index and EPA tests that had been pending have been completed:

- a. Contact your cert team member to unlock summary sheet.
- b. Update CFEIS summary sheet with EPA test data.
- c. Make sure that the summary sheet is processed correctly.
- c. Change the "CAP2000 Conditional Certificate" code to '2' by submitting Summary Sheet
X1 and ZZ records with the process code 'C' and other key fields, i.e., mfr code, Test Group name, Summary Sheet index number.